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each of the subjects in A and B—a major examination for specialists and a minor examination for those who take the subject as an adjunct to their specialty.

III.—Rules for Examinations.

Candidates must elect one of the subjects in Division A or B as their specialty or major, the examination in which shall count 50.

In addition to the major special subject, candidates *must* be examined on two minor subjects chosen by themselves from Divisions A, B and C, at least one of which must be from Division A and one from either B or C. Each of these subjects shall have a maximum value of 10.

Each candidate *may* take as many additional examinations from Division A, B or C as he chooses, but no one examination will count more than 5.

Each candidate shall submit a statement of his educational history and opportunities for scientific training and experience, which shall be accessible to the Secretary of Agriculture in selecting eligibles for special positions.

IV.—Eligible Lists.

A record will be kept for each person on the eligible list of all the subjects in which he has passed.

Eligible registers shall continue two years from the date of examination.

Eligibles shall be drawn from the lists thus established to fill all vacancies in the scientific and technical service of the Department of Agriculture. Inspectors, assistant inspectors, meat inspectors, stock examiners, microscopists and assistant microscopists in the Bureau of Animal Industry outside of Washington, and river, rainfall and other special observers in the Weather Bureau, are not considered within this class, and these positions are to be filled, as provided under VI.

V.—Appointments and Promotions.

Candidates on the lists thus established shall be eligible to appointment to any position in the Department of Agriculture below the grade of Assistant Chief, under regulations to be established by the Commission. Vacancies occurring in any grade in the Department shall, as far as practicable, be filled by promotion from lower grades on such tests of fitness as the head of the Department shall prescribe. When this is not practicable, the Secretary of Agriculture shall call upon the Civil Service Commission to make certification from the aforesaid list of eligibles in accordance with the statement which he shall make regarding the duties of the position to be filled and the relative importance of these duties. It is expected that the positions of Assistant Chief and Chief will ordinarily be filled by promotion, but in case this is

not practicable special examinations shall be held in which the employees of the Department shall be allowed to compete.

VI.—Temporary Service in Minor Positions.

Each candidate shall, at the time of examination, state whether or not he is willing to accept temporarily a position in the service of the Department outside the class of 'Assistant' here provided for, and, if so, what branch or branches of work he prefers. A record of this shall be kept in connection with the eligible lists of the branches thus selected, and whenever the Department of Agriculture shall ask for a veterinary inspector, microscopist, clerk-copyist, book-keeper, stenographer, compiler, artist, curator, propagator, skilled laborer, or other class of eligible outside the class of 'Assistant' here provided for, the Civil Service Commission shall give the person who has passed the Assistant's examination (if there be one) preference in the certification. In case of failure to find such scientific eligible, these positions shall be filled, as heretofore, from the list of eligibles for the general departmental service.

THE COAST AND GEODETIC SURVEY.

In consideration of the changes that will follow the appointment of a new Secretary of the Treasury, it is to be hoped that a searching investigation will be made into the policy which has resulted in such great injury to the Coast and Geodetic Survey.

This Bureau, organized at the instance of President Jefferson, has occupied a position in the esteem of men of science and affairs, at home and abroad, which has amply justified the wisdom of its projector—a result, in no small measure, due to the wise appreciation of the administrations which from 1807 to 1885 recognized the folly of subjecting to political vicissitudes the management of a service whose success depended upon the labors of a trained body of men, valued for their acquirements as hydrographers, topographers, astronomers and physicists, and dependent for their employment upon their merits and devotion to duty. During these years the Survey, either by discovery or improvement, has won many a laurel for American science, and no other body under the government has done more to make

the American name an honored one where applied science is recognized and appreciated. The physical hydrographic studies, applied in the improvement of our greatest harbors and in assisting the Mississippi Commissioners; the magnetic data it has collected, deduced and accumulated for the Surveyor, almost his only guide in settling disputes about land lines which now put in jeopardy millions of dollars worth of property; the admirable maps of the coast and adjacent waters it has produced, and the wealth of information its archives contain for the naval and military men upon whom may devolve the duty of protecting the country from foreign invasion—surely are fruits precious enough to satisfy the most exacting of utilitarians.

Breadth in conception, thoroughness in method, rapidity and economy in execution—these were the characteristics of the Survey when an enlightened and generous supervision gave assistance and support to the administration of such Superintendents as Hassler, Bache, Peirce, Patterson, Hilgard and Mendenhall; and to the honor earned by the services of the Survey to commerce and science must be added the credit due to the firmness with which its chiefs regulated their management in accordance with the highest form of what is now called Civil Service Reform.

The first appointment of a Superintendent qualified by no previous scientific experience for his position was made in 1885, but fortunately the appointee was a man of discretion, broad in his views and judicious in temperament. In attending to the professional details of the work the views and opinions of the most experienced and ablest of his scientific assistants were secured and given weight; his best efforts were called forth for the welfare of the Survey, and when he offered his resignation he surrendered his position with the knowledge that his honesty and fairness had won him

the respect of his associates, to whom he had come a stranger, and that his stay had been the means of preserving the Survey from the machinations of scheming spoils-men.

President Harrison during his term in the Senate had acquired a personal knowledge of the operations of the Survey and a strong appreciation of the requirements that should be satisfied by a proper head for it, and to the making of such a selection it is well known that he gave an unusual amount of personal attention, the result being the happy choice which fell on Dr. T. C. Mendenhall. To the readers of *SCIENCE* it would be an act of supererogation to recapitulate the qualifications of this distinguished scientist for the position, and no act of Mr. Harrison's administration reflected more credit upon his judgment than the selection he made for Superintendent of the Coast and Geodetic Survey. The influence of the new chief was at once felt in every division of the office, as he brought to his supervision not only a trained scientific mind, but the ripe results of a personal experience with nearly every line of work in the Survey, with the consequence that at no time in its whole history was the Survey more productive in original and practical results than for the term that Dr. Mendenhall was allowed control of the Bureau.

With the change of administration in 1893 came a return of the hostile spirit with which the Survey was treated in 1885. The President, it is true, appreciated the abilities of the Superintendent, the great work he had done, recognized his suitability and expressed his desire that he should remain; but the capture of a bureau where partisanship had never reigned was too tempting a prize to be lost for the new ruler that held sway in the Treasury Department. Left with only the semblance of executive power, and subjected to the pettiest and most odious treatment, Dr. Mendenhall remained

at his post until he had thwarted the most serious attack made in years on the integrity of the Survey, and then resigned an office his self respect could not allow him to retain.

In the successor to Dr. Mendenhall the Treasury Department was fortunate enough to find a professional gentleman who showed the accommodating spirit with the clerical idea of how a scientific bureau should be conducted that the layman, Mr. Thorn, failed in. The new appointee, General Duffield, was a civil engineer in active practice, but so far as has been shown none of his experience has been in connection with the special lines of work for which the Coast Survey has been noted. He had been employed in the construction of railroads, in operations under the United States Engineers and in contract land surveying; but seventy years had passed over his head at the time of his appointment without making his name a familiar one outside of his own vicinity. The professional career of the new Superintendent would indicate, if not expert knowledge of, at least intelligent sympathy with, the needs and requirements of his new charge; but his attitude from the very first showed that this was not to be the case. For inspiration as to what should be his general policy in the Survey he took the directions of the Chief Clerk of the Treasury Department; for special information he drew, not on his assistants, but on the recent appointees in the clerical positions, whose places in the Bureau were due to the same generous hands which had benefited himself. As the only places in the office, unprotected by civil service laws, which had not been filled by the new administration were those of the scientific force, upon them a raid was next to be made.

With only a little over nine weeks' experience in an office to whose duties he had come an entire stranger, and without any

consultation with his natural advisers, the Superintendent wrote a letter to Congress, strongly advising a reduction of 20 per cent. in the field force. This wild suggestion was ignored by the Senate, where long service had made the needs and requirements of the Survey best appreciated, but the insistence of the House of Representatives on general economy at any cost led to a compromise whereby a reduction of force was secured.

The assistant in charge of the office, who had had that important position under Mr. Thorn and Professor Mendenhall, had the temerity to protest against the action of a Superintendent who had never drawn up an estimate for a year's work on the Survey and had never been called upon to consider the requirements, in men, for a season's work of the field parties, and his reward for his honesty and manliness in putting the welfare of the Survey above consideration for his own safety was a prompt request for his resignation. A lucrative berth was required for the Superintendent's son and to provide it an assistant was dismissed, and to secure for this young man, with no training in the distinctive work of the Survey, one of the highest salaries paid by the Treasurer, a reduction of \$500 per year was made in the pay of the Geodesist who had connected the Pacific and Atlantic slopes by the grandest scheme of triangulation ever executed.

When the time for carrying into effect the requirements of the new appropriation bill arrived the full measure of the Superintendent's qualification for his position became apparent. The bill necessitated the retirement of four assistants. The Superintendent determined to remove eight; but two received by accident notice of the fate intended for them and had time enough to bring to the notice of the Secretary of the Treasury such strong presentation of the injustice intended them that he interfered

in their behalf, and only six were undefended before him and dismissed.

If it was only for his treatment of one of these gentlemen the Superintendent stands overwhelmingly condemned for absolute unfitness for the place he holds. Among these dismissed assistants was Professor George Davidson, sound in health, active in mind, the most distinguished member of the scientific force of the Bureau, a man of international reputation and the staunchest reliance of every Superintendent from Bache to Mendenhall. For fifty years his life was one of indefatigable industry, his record one of honor and distinction in every line of work he has been engaged in. Dean of the scientists on the Pacific Coast, delegate to the International Geodetic Association, member of the National Academy of Sciences, and with a name connected with every piece of Coast Survey work from the Aleutian Islands to San Diego, a man who had deserved every distinction that could be earned in the Survey, he was rewarded for a half century of the highest class of work by a dismissal which went into effect in one hour after notice of it was received.

Just before the last sweeping extension of the civil service regulations took the scientific places in the Coast Survey out of the reach of spoilsman a last effort was made to utilize a power which was now to be lost forever, but the Secretary of the Treasury showed his appreciation of the inopportuneness of so shameless an exercise of spoliation by allowing the removal of one efficient and respected officer instead of the three that the Superintendent intended to dismiss.

It is true that the recent extension of the civil service regulations render it improbable that such unjustifiable and disorganizing action will again be possible; but the memory of his subserviency to the policy of spoliation, and the knowledge of the utter lack of sympathy he has shown for

the work and needs of the Survey, preclude any hope of usefulness from the present Superintendent in the future.

The duties of the Superintendent, when properly executed, form a burden for the strongest of men; they broke down the strength of Hassler, Bache, Patterson and Hilgard; and Professor Peirce, the greatest American mathematician of his day, found them too great to sustain. To their assumption came the present incumbent, with no previous experience of them, already burdened with the weight of 70 years and, as events have proved, with a mind which had lost its elasticity and entirely unequal to the task of mastering the great requirements that were demanded in a Superintendent. A mind of the first order would have been capable of this mastery; a younger man, talented and receptive, would have recognized that until time and study had remedied his deficiencies a frank demand for the advice and views of the assistants who had grown gray in work which had earned the commendation of all qualified to pass upon it was not only due to the best interests of the government, but was most advantageous for himself. Men of the first class appear rarely; that he was not of the second the course of the Superintendent makes evident to everyone; failing in both, the necessity of replacing him by a competent successor is a self-evident proposition. That the successor should have the confidence and suffrages of scientific men needs no better argument than the results which have followed as a consequence of the appointment of the present incumbent.

We need enumerate but a few of the measures and demands made on the Coast Survey to convince the general public of the necessity for an unusually capable man in the Superintendency; there are the ordinary surveys and the questions of necessity for new and minuter resurveys where the

commerce and defense of the coast seem to demand them; there is the question of the places for an economical and adequate survey of the vast shore line of Alaska; the assignment of officers to make the necessary surveys for disputed State boundaries and to sit on commissions for the establishment and improvement of harbors; and there is the provision of the astronomic, the gravimetric, magnetic, hypsometric and geodetic connections which will bring into an accordant whole the different surveys which the growth of our country and our rank as a civilized people are inevitably forcing us to provide.

Our bankers and merchants scan jealously the qualifications of every man suggested for a place of responsibility connected with the conduct of the public financial policy. Does not a similar interest call upon scientific men to insist upon a worthy chief for a bureau whose results form so large a measure of the amount of merit they can claim for the value of scientific application in public affairs and of the reputation due our country for her additions to the sum total of human knowledge?

But that the desirable man may be had in this case it is necessary that the innovations in the spirit of the management, in this Bureau that date from 1885 should be changed. The scientific bureaus of the government, to be properly officered, cannot be treated as part of the prey from which the victors in political wars can reward their most energetic supporters. Their chiefs will never fail in patriotic devotion to the best interests of their country because they neglect to emulate the ostentatious devotion of the man working for an office.

From the political scientist, bound by the rules of the game to suffer the vicissitudes of party strife, what can be expected but a perfunctory attention to the affairs of an office whose details his term of official life gives but little promise that he will be

given sufficient time to master? If our country wishes for the reward and fame that accrued from the labors of Hassler, Bache, Maury, Henry and Baird it must perpetuate the policy that fostered their genius; the direction of the great scientific bureaus must be placed in the hands of capable men, and to these chiefs the same measure of protection must be accorded that now safeguards their subordinates. J.

THE AMERICAN MORPHOLOGICAL SOCIETY.

THE seventh annual meeting of the American Morphological Society was held at the Harvard Medical School, Boston, December 29, and at the Museum of Comparative Zoology, Cambridge, December 30, 1896. The following persons were elected to membership: Dr. G. Lefevre, Johns Hopkins University; Dr. A. Schaper, Harvard Medical School; Dr. E. E. Bickford, Vassar College; Dr. W. E. Castle, Knox College; Dr. A. W. Weyssse, Massachusetts Institute of Technology; Dr. A. G. Mayer, Harvard University; Dr. J. H. Gerould, Dartmouth College; Dr. H. S. Jennings, Jena; Dr. H. V. Neal, Munich; Miss Margaret Lewis, Radcliffe College; Dr. Ida Hyde, Cambridge; Mrs. G. C. Davenport, Cambridge; Dr. H. McE. Knowler, Williams College; Dr. C. M. Child, Chicago University; and Dr. E. L. Rice, Allegheny College.

The following communications were presented and discussed:

The Individuality of the Cell. ARNOLD GRAF.

The paper formulated a cellular theory opposed to the classical theory of *Schleiden* and *Schwann*, and to the *Toliplasma* theory of *Nägeli* and *Whitman*, in the following terms:

1. The cell is a physiological but not a morphological unit.
2. It consists morphologically of numerous lesser units, which pertain to different categories, being specifically irritable by varying stimuli.